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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,462	03/26/2004	Rajendra Tushar Moorti	15574US02	9326

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EXAMINER	
CHOW, CHARLES CHIANG	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/810,462	MOORTI ET AL.	
	Examiner	Art Unit	
	Charles Chow	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-17,19-27,29 and 30* is/are rejected.

7)☒ Claim(s) *8,18 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *3/26/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

1. This is the office action in response to the filing date 3/26/2004.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 9, 11, 19, 21, 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Wright et al. (US 5,648,992).

For claim 1, Wright et al. [hereafter as Wright] teaches a method for controlling an antenna system [steps in Fig. 4/Fig. 3, for controlling antennas 10, 12 & col. 3, lines 14-44]

the method comprising dwelling on at least one of a plurality of antennas [the switch 14 couples either antenna 10 or antenna 12 for dwelling on, to based on diversity control indicator 29 in col. 4, lines 19-33; the 625 micro-second data burst dwelling on in col. 22-35];

determining a gain for said dwelled-on at least one of a plurality of antennas [processor determines, selects, the gain in path 15, 19, 17 for the received signal from the dwelling on antenna, col. 4, lines 60-64 & step 110 in Fig. 4];

determining at least one of a plurality of signal quality metrics for said dwelled-on at least one of a plurality of antennas [the diversity control signal 29, generated from diversity procedure 108 in Fig. 4, selects the antenna via switch 14 based on quality metrics, Rssi, BER, frequency variance, Fvar, Timing variance Tvar, in col. 4, line 65 to col. 5, line 21]; and

selecting for signal processing a portion of said dwelled-on at least one of a plurality of antennas [the processor reads the derived parameters of the received burst portion from the antenna being dwelled on according to the step 114 in Fig. 4; the derived parameters rssi, Fvar, Tvar, CRC, col. 5, lines 42-53; claim language does not have the meaning for dwelling on a portion of a plurality of antennas],

based on said determined gain [step 110; gain control 28] and said determined at least one of a plurality of signal quality metrics from said dwelled-on at least one of a plurality of antennas [the processor 25 generates diversity control 29 based on the determined gain control 28 and the derived quality metrics from RSSI, data, Rvar, Tvar in col. 4, lines 60-67, the quality metrics, SQI & BER in col. 5, lines 7-21, of a dwelling antenna 10 or 12].

For claim 11, Wright teaches a machine readable storage having stored thereon a computer program having at least one code section for controlling antenna system [the code section, processor software in col. 5, lines 3-10; the stored procedures, code section, in ASIC can be executed by processor 8051, 6800 or H8 in col. 9, lines 29-38],

the at least one code section being executable by a machine for causing the machine to perform the steps [the code sections for antenna diversity procedure 108 gain control procedure 110 & set antenna selection switch 114, are executed in Fig. 4; the steps in Fig. 5-9] comprising

dwelling on at least one of a plurality of antennas [the switch 14 couples either antenna 10 or antenna 12 for dwelling on, to based on diversity control indicator 29 in col. 4, lines 19-33; the 625 micro-second data burst dwelling on in col. 22-35];

determining a gain for said dwelled-on at least one of a plurality of antennas [processor determines, selects, the gain in path 15, 19, 17 for the received signal from the dwelling on antenna, col. 4, lines 60-64 & step 110 in Fig. 4];

determining at least one of a plurality of signal quality metrics for said dwelled-on at least one of a plurality of antennas [the diversity control signal 29, generated from diversity procedure 108 in Fig. 4, selects the antenna via switch 14 based on quality metrics, Rssi, BER, frequency variance, Fvar, Timing variance Tvar, in col. 4, line 65 to col. 5, line 21]; and

selecting for signal processing a portion of said dwelled-on at least one of a plurality of antennas [the processor reads the derived parameters of the received burst portion from the selected antenna dwelled on according to the step 114 in Fig. 4; the derived parameters rssi, Fvar, Tvar, CRC, col. 5, lines 42-53]

based on said determined gain [step 110; gain control 28] and said determined at least one of a plurality of powers from said dwelled-on at least one of a plurality of antennas [the IFIC 22 generates the detected power level of received signal from a dwelling antenna 10 or 12, col. 4, lines 40-48,].

For claim 21, Wright teaches a system [claims 16-20 in col. 12 to col. 14] for controlling an antenna system [the at least two antennas & antenna switching means in col. 12, lines 60-67], the system comprising

a processor [25] that dwells on at least one of a plurality of antennas [processor executes diversity & gain procedures, the steps 114 to select a better quality antenna, Fig. 4];

said processor determines a gain for said dwelled-on at least one of a plurality of antennas [processor determines the gain from generated gain control 28, gain control procedure 110 in Fig. 4, for the received signal from the dwelling on antenna, col. 4, lines 60-64];

said processor determines at least one of a plurality of signal quality metrics for said dwelled-on at least one of a plurality of antennas [the diversity control signal 29, generated from diversity procedure 108 in Fig. 4, selects the antenna via switch 14 based on quality metrics, Rssi, BER, frequency variance, Fvar, Timing variance Tvar, in col. 4, line 65 to col. 5, line 21]; and

said processor selects for signal processing a portion of said dwelled-on at least one of a plurality of antennas [the processor reads the derived parameters of the received burst portion from the selected antenna dwelled on according to the step 114 in Fig. 4; the derived parameters Rssi, Fvar, Tvar, CRC, col. 5, lines 42-53]

based on said determined gain [step 110; gain control 28] and said determined at least one of a plurality of powers from said dwelled-on at least one of a plurality of antennas [the IFIC 22 generates the detected power level of received signal from a dwelling antenna 10 or 12, col. 4, lines 40-48,].

For claims 9, 19, 29, Wright teaches the wherein said at least one of a plurality of signal quality metrics may be an estimated received power, a received power [the detected power level of received signal in col. 4, lines 40-48], a bit error rate [BER in col. 5, lines 13-15].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2, 4, 6, 12, 14, 16, 22, 24, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki (US 5,787,122)

For claims 2, 12, 22, Wright teaches the procedures 108, 114, code, to select antenna, but fails to teach the selecting of a starting antenna.

Suzuki teaches the selecting a starting antenna from said at least one of a plurality of antennas [the selecting of antenna, starting antenna, based on the previously determined sequential order in col. 9, lines 13-26, Fig. 10; the control unit 78 of a receiving station is obviously having the code for selecting a antenna based on the previously determined sequential order], in order to receive a transmitted signal from receiving antenna. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Wright with Suzuki's selecting a antenna based on previously determined sequential order, in order to receive a transmitted signal.

For claims 4, 14, 24, Wright teaches the procedures 108, 114, code, to select antenna, but fails to teach the selecting of a starting antenna.

Suzuki teaches the selecting said starting antenna based on random selection [the selecting of antenna, starting antenna, based on the randomly selection M-series data in col. 9, lines 13-26, Fig. 10; the control unit 78 of a receiving station is obviously having the code for selecting a antenna based on the random selection], using the same reason in claim 2 for combining with Wright.

For claims 6, 16, 26, Wright teaches the gain controlling for selecting an antenna of the automatic gain control [the gain control 28 for the automatic gain control from processor 25 ,Fig. 3, the procedures 108, 114, code, to select antenna]. but fails to teach the selecting of a starting antenna.

Suzuki teaches the comprising determining a starting antenna based on the previously determined sequential order, col. 9, lines 13-26; the control unit 78 of a receiving station is obviously having the code for selecting a antenna based on the sequential order, using the same reason in claim 2 for combining with Wright.

4. Claims 3, 13, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki, as applied to claims 2, 12, 22 above, and further in view of Lyons et al. (US 6,922,549 B2).

For claims 3, 13, 23, Wright teaches the procedures 108, 114, code, to select antenna, but fails to teach the selecting a starting antenna.

Suzuki teaches the selecting of a starting antenna based on the previously determined sequential order. Wright & Suzuki fail to teach the selecting of an antenna based on a predetermined criteria.

Lyons et al. [hereafter as Lyons] teaches the antenna selection diversity is based on the predetermined criteria [the maintaining of the packet error rate PER at 5% or 20% at 40 or 80 feet distance respectively, col. 14, lines 32-44; the code, instruction, executed by the processor in col. 16, lines 4-40], for maintain the data quality at error rate of 5%. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wright, Suzuki with Lyons' maintaining data quality at 5%, in order to improve the previously determined sequentially antenna selection by maintaining the data error rate low at 5%.

5. Claims 5, 15, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki, as applied to claims 2, 12, 22 above, and further in view of Balachandran et al. (US 5,481,571).

For claims 5, 15, 25, Wright teaches the procedures 108, 114, code, to select antenna. Wirght fails to teach the selecting an starting antenna. Suzuki teaches the selecting of a starting antenna based on the previously determined sequential order. Wright & Suzuki fail to teach the antenna selection is based on prior history said selection of said portion of dwelled-on at least one of a plurality of antennas.

Balachandran et al. teaches the antenna selection is based on prior history said selection of said portion of dwelled on at least one of a plurality of antennas [the selecting of a portion of the dwelling antenna from two antennas, is processor controlled according to the hysteresis value, prior history, col. 3, lines 10-35], for reliably selecting an antenna based on the previous hysteresis, prior history. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Wright, Suzuki with Balachandran' hysteresis value, in order to reliably selecting an starting antenna based on the previous hysteresis.

6. Claims 7, 17, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki and Lyons-'549 B2.

For claims 7, 17, 27, Wright teaches the procedures 108, 114, code, to select antenna, but fails to teach the selecting an starting antenna.

Suzuki teaches the selecting of a starting antenna to dwell based on the previously determined sequential order, in clam 2, & using the same reason to combine Suzuki with Wright.

Wright & Suzuki fail to teach the selecting an antenna dwelling order based on a predetermined criteria.

Lyons teaches the antenna selection for dwelling onto it based on a predetermined criteria [the maintaining of packet error rate PER at 5% or 20% at 40 or 80 feet distance respectively, col. 14, lines 32-44; the code, instruction, executed by the processor in col. 16, lines 4-40], to combining with Wright, Suzuki in order to improve the sequential antenna selection order, by maintaining the data error rate low at 5%.

7. Claims 10, 20, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki and Todd (US 6,002,672).

For claims 10, 20, 30, Wright teaches the procedures 108, 114, the code, to select antenna, & the selecting said portion of said dwelled-on at least one of a plurality of antennas, in claim 1, but fails to teach the selecting an starting antenna.

Suzuki teaches the selecting of a starting antenna to dwell based on the previously determined sequential order, in clam 2, & using the same reason to combine Suzuki with Wright.

Wright & Suzuki fail to teach the antenna selection based on meeting a specified range of values for at least one of said plurality of signal quality metrics.

Todd teaches these features [the antenna selection is to meet the BER threshold thr20 having a BER range greater than 0% and less than, equal to 8%, 440 in Fig. 4b, 19-30], for controlling the quality metrics BER in a low error range. Therefore, It would have been

obvious to one of ordinary skill in the art at the time the invention was made to upgrade Wright, Suzuki with Todd's BER quality metrics, in order to provide tolerable BER range for the antenna selection.

Claims Objection

8. Claims 8, 18, 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The cited prior arts fail to teach the determined gain for said dwelled on based on said quality metrics, on at least one of the plurality of power coupling parameters [applicant's power coupling factors L2-Lm in paragraph 0036, Fig. 1B, for the switch leakage to other output terminal of the switch]. The following are the prior arts being considered, Wright, Suzuki, Lyons, Balachandran, Todd, McNicol. et al. (US 5,940,454), Xue (US 6,049,705), Herscovich et al. (US 2004,0137,924 A1).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

   A. McNicol et al. (US 5,940,454) teaches the blind switch diversity control for antenna selection based on the quality threshold & expiration time [Fig. 5, abstract].

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or

proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow CC.

July 3, 2006.

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